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rich in fossils. At a much higher level we have the gypsum of Aix, which you probably know by name at least.

I beg you will accept my highest regard and sincere devotedness. — Count Gaston de Saporta, Aix in Provence.

MICROSCOPY.[1]

Microscopical Structure of Amber. — A paper on this subject, contributed jointly by H. C. Sorby and P. J. Butler, to the Royal Microscopical Society, furnishes many interesting observations and reflections. Scattered irregularly through the masses of amber are a vast number of minute cavities, usually $\frac{1}{2000}$ to $\frac{1}{30000}$ of an inch in diameter, though some are as large as $\frac{1}{1000}$, and others probably as small as $\frac{1}{100000}$ of an inch. Though very numerous in the clouded portions of the amber, these cavities are nearly wanting in the very transparent specimens, and therefore cannot be considered a necessary result of the changes which occurred during the hardening of the balsam or resin from which the amber must have been formed. They are usually round, the shape which would be naturally assumed by drops of water or bubbles of air confined in a stiff liquid, differing in this respect from the cavities in crystals which are often spaces left vacant during the formation of the crystal, and are bounded by crystalline planes having direct relation to the form and structure of the crystal itself. The cavities in amber, however, are sometimes elongated or otherwise changed by internal movements in the resinous mass before it became hard and brittle. Some of these cavities are filled with a liquid, probably water, which differs so slightly from the amber in refractive power, that these cavities are transparent throughout a large portion of their area, the circumference being marked by a narrow, dark line. Other cavities contain gas, constituting true air bubbles, whose dark outline constitutes at least one third of their diameter, leaving a comparatively small bright spot in the centre. Still other cavities contain liquid with an inclosed air bubble ; while some of the fluid cavities only seem to contain one or more air bubbles from the appearance through them of images of one or more smaller cavities beneath. Most of the cavities originally contained water, which was eliminated during the process of change from a soft balsam to a hard resin, but subsequently the water escaped from many of the cavities leaving air cavities instead, which are not only especially abundant near the natural surface of pieces of amber, but may also be found very generally close to the surfaces of sections which have been prepared and mounted for microscopical use. A comparatively rare form of cavity, and characteristic of amber, is balloon shaped, the portion representing the car being nearly always filled with water and the upper part of the balloon with air. This may have been originally a round fluid cavity, from which the gas was allowed to escape into the still plastic, surrounding mass by reason of diminished pressure, shrinkage in the mass having continued to occur after the external portion had become hardened into an immovable crust; a theory which is confirmed by the effects on polarized light, the central portions of the mass having no power to depolarize the light, while the marginal portions depolarize it in such manner as to indicate a strain caused by pressure in the line of the circumference and not in the line of the radius. Similarly, the black crosses seen under polarized light in certain portions of the amber, having as nuclei either air bubbles or minute solid angular bodies of a sand-like appearance, are of a character to indicate not increased but diminished pressure from within, not an expansion of the contents, or a contraction of the surrounding material upon it as is the case with minute crystals inclosed in diamonds, but a shrinkage of the contents of relatively hardened layers surrounding the bubbles or granules.

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[1] Conducted by Dr. R. H. Ward, Troy, N. Y.

False Light Excluder. — E. Gundlach of Rochester, N. Y., mounts his new two-inch lenses with a brass tube $\frac{5}{8}$ inch long projecting below the front surface of the objective and having a perforated diaphragm at its lower end. This cuts off much of the stray light that would otherwise enter, and still leaves $1\frac{1}{8}$ inch of working focus.

New Objects. — The very interesting preparations of recent and fossil diatoms, by Dr. R. S. Warren, of Waltham, Mass., can now be obtained from Mr. Charles Stodder, of Boston. Many of the slides, especially those from Savannah and the Isles of Shoals, contain new or rare forms.

Charles Zentmayer, of Philadelphia, son of the well-known Joseph Zentmayer of the same city, is preparing double-stained vegetable tissues with great success. The coloring is excellently distributed and the cell peculiarity well preserved.

Identity of the Red Blood Corpuscles in Different Human Races. — Dr. J. G. Richardson, of Philadelphia, well known as a leading advocate of the possibility of distinguishing by measurement the blood corpuscles of man from those of many of the familiar domestic animals, has recently extended his researches to the blood corpuscles of the different races of mankind, with a view to determine by comparative study whether they are identical or not. Taking advantage of the opportunity afforded by the International Exhibition at Philadelphia, he obtained, in some cases with considerable difficulty, permission to secure specimens of their blood from a considerable number of the members and *attachés* of the foreign commissions present at the Centennial. A finger having been suddenly pricked with a cataract needle, the top of the exuding drop of blood was touched to the centre of a glass slide, and the small drop thus obtained was spread by means of the edge of another slide, after Dr. Christopher Johnson's excellent method. In the dried film the corpuscles were measured by a cobweb micrometer whose reading, as actually employed in this work with a $\frac{1}{25}$ immersion objective of a power of 1800, was determined by comparison with a standard of known accuracy. Only the circular disks were measured, in the thinnest part of the film, where they were least distorted in drying and most nearly in a natural condition, this method being believed to give the dimensions of the normal cell-elements more satisfactorily than can be accomplished by taking the average of the different diameters of the distorted corpuscles. So slight a deviation from a circular form as an oval having diameters of 1–3030 and 1–2857 was easily recognized, and such individuals were discarded, but all isolated circular red disks which appeared in the field were measured without selection. The measurements were recorded in fractions of an inch. Of 1400 corpuscles examined, six had a measurement of 1–4000, ten a measurement of 1–2777, and the remainder were between these two extremes. Eighty-three per cent of the whole measured from 1–3448 to 1–3030, and consequently appeared of about the same size under a power of 200. The slightly smaller averages of the Italian, Swedish, and Norwegian specimens are believed to be too small for a decisive indication of a natural difference, and the general result is believed by the author to indicate the essential identity of the different specimens studied. We have prepared the following table, which embodies all the data published in Dr. Richardson's paper in the *American Journal of Medical Science* for January, 1877: —

NATIONALITY OF SUBJECT.	Age of Subject.	Number of Corpuscles Measured.	Average Diameter of Corpuscles.	Maximum Diameter of Corpuscles.	Minimum Diameter of Corpuscles.	Percentage of Corpuscles less than 1–3448 in Diameter.	Percentage of Corpuscles between 1–3448 and 1–3030 in Diameter.	Percentage of Corpuscles more than 1–3030 in Diameter.
Japanese	..	100	1–3212	1–2777	1–3737	8	82	10
Spanish	30	100	1–3226	1–2777	1–3571	6	89	5
Belgian	38	100	1–3203	1–2777	1–3846	7	88	5
Swiss	40	100	1–3203	1–2857	1–4000	7	82	11
Turkish	29	100	1–3197	1–2777	1–3846	4	80	16
Danish	25	100	1–3257	1–2857	1–4000	12	82	6
Russian	27	100	1–3190	1–2857	1–3571	2	91	7
Norwegian	35	100	1–3252	1–2857	1–4000	10	86	4
Swedish	33	100	1–3254	1–2777	1–3737	13	82	5
Italian	35	100	1–3272	1–2777	1–4000	10	83	7
French	67	100	1–3239	1–2777	1–3737	12	80	8
Dark mulatto, born in U. S.	52	100	1–3229	1–2857	1–3856	11	83	6
Cherokee Indian, born in U. S.	48	100	1–3215	1–2857	1–4000	10	83	7
English parentage, born in U. S.	40	100	1–3191	1–2777	1–3846	6	85	9
Total	..	1400	1–3224	1–2777	1–4000	8	83	9